DISCUSSION SECTION NUMBER TO RETURN EXAM _____

STATISTICS 2023   NAME, IN INK (print)_____

EXAM THREE   SIGNATURE, IN INK_____

FALL 2000   SS NUMBER, IN INK_____

Once this exam is graded and returned to you retain it for grade verification.

TRUE OR FALSE. Answer with a capital T or F.   **(3 points each)**

_____ 1. The standard error for point estimate for the population mean is the center of a confidence interval to estimate the population mean.

_____ 2. As the sample size increases the standard errors of the point estimates also increase.

_____ 3. One percent of all the confidence intervals generated from the 99% confidence interval equation do not contain the value of the parameter that is estimated

_____ 4. Sample statistics calculated from observed data are used as point estimates for population parameter values.

_____ 5. The decision in an hypothesis test is whether to reject or not reject the alternative hypothesis.

_____ 6. If the null hypothesis is rejected then the conclusion states that the data do support the idea stated in the alternative hypothesis.

_____ 7. In an hypothesis test if the value of the Z test statistic is equal to 8.2 then the null hypothesis could be rejected with a reasonable error rate.

_____ 8. . The p-value of a hypothesis test is chance that the null hypothesis is wrong and that the alternative is correct.

Questions on the t-table.   **State the answer on the line. (3 points each)**

_____ 9. What is the $P(t > 3.355)$ if df=8?

_____ 10. State the value of t_o, if the $P(-t_o < t < t_o)=.90$ and the df=14.

_____ 11. $P(t < -1.812)=?$, if the df=10

_____ 12. What is the p-value of a right-tail hypothesis test based on a large sample if the test statistic value is 2.16?

_____ 13. If a 90% confidence interval to estimate a population mean is (45.6, 58.4) what is the value of the point estimate for the population mean?

_____ 14. What is the value of the test statistic if the p-value in a left-tail hypothesis test based on a large sample is equal to 0.0116?

_____ 15. If a 95% confidence interval based on a large sample to estimate a population mean is (657.94, 899.02) then what is the value of the standard error of the point estimate for the population mean?

_____ 16. If a random sample of 80 observations produces a sum of squares equal to 35,298.2 and a sum equal to 1,184 what is the numerical value of the point estimate for the population mean?

_____ 17. If a random sample of 80 observations produces a sum of squares equal to 35,298.2 and a sum equal to 1,184 what is the numerical value of the point estimate for the population variance?

_____ 18. How many adult female coyotes would have to be sampled in order to estimate their average weight with a 95% confidence interval that is 3 pounds wide? Assume the standard deviation of the weights for adult female coyotes is 4 pounds.

_____ 19. If the rejection region in a two-tail hypothesis test based on a sample with 19 observations drawn from a population whose variance is unknown is below −3.610 and above 3.610 what is the maximum error rate of rejecting a true null hypothesis which this researcher will tolerate?

STATE THE ANSWER. State the answer on the line given.   (3 points each)
An advertiser on the web is interested in estimating the mean number of links that a customer would use from a certain web site. Assume that a random sample of 676 customer visits to a certain web site was examined. The number of links used from the web site for these 676 customers is equal to 4.8 links with a standard deviation of 2.6 links. Use this information to answer the next four questions.

_____ 20. What is the numerical value of the point estimate for the mean number of links used from the web site?

_____ 21. What is the numerical value of the estimated standard error for the point estimate for the mean number of links used from the web site?

_____ 22. Assume that the estimated standard error of the point estimate for the mean number of links used from the web site is 0.12. What is the numerical value of the bound of error for a 95% confidence interval to estimate the mean number of links used from the web site? State four digits past the decimal.

_____ 23. If the estimated standard error for the point estimate for the mean number of links used from the web site is 0.12 what is the numerical value of the test statistic to test whether the mean number of links used from the web site is 5.1 links?

Confusion currently exists with the count of the votes cast in the 2000 presidential election. In Palm Beach County Florida there were a large number of votes not counted due to improperly marked ballots. The county officials sampled 4,500 ballots to estimate the proportion of ballots improperly marked in that county. Out of the 4,500 ballots sampled there were 270 identified as improperly marked. Use this information to answer the remaining questions on this page.

_____ 24. Based on this sample what is the numerical value of the point estimate for the proportion of improperly marked ballots in Palm Beach County Florida?

_____ 25. What is the numerical value of the estimated standard error for the point estimate for the proportion of improperly marked ballots in Palm Beach County Florida? Round your answer to five digits past the decimal.

_____ 26. If the estimated standard error of the point estimate for the proportion of improperly marked ballots in Palm Beach County Florida is 0.004. What is the numerical value of the bound of error for a 95% confidence interval to estimate the proportion of improperly marked ballots in Palm Beach County Florida? State your answer with five digits past the decimal.

HYPOTHESIS TEST QUESTIONS. State the answer on the line.   (3 points each)
During a political crisis, such as the 2000 presidential election vote count, households in America watch more television than they do during other times. A political group analyzing the television-viewing behavior during the post election crisis sampled 25 households and measured the time in hours that the members of the household viewed the television in a week. The sample of 25 households produced a mean viewing time for the households of 29.8 hours with a standard deviation of 18.5. Use this information to answer the questions on this page.

_____ 27. State the alternative hypothesis if the research question is, "Do the data support the idea that the mean television household viewing time per week exceeds the mean of 22 hours per week that is typically observed in American households?"

_____ 28. State the numerical value of the test statistic that would result from this situation. Round your answer to one digit past the decimal.

_____ 29. What is the name of the distribution that represents the set of possible test statistic values if in fact the mean television household viewing time per week during a political crisis is just 22 hours per week?

_____ 30. The null hypothesis in this situation would be rejected at the 1% level if the test statistic is more than what value?

_____ 31. Assume that the value of the test statistic in this situation was 3.2. What is the p-value associated with the test statistic value of 3.2 in this situation?

_____ 32. Assume the p-value in this hypothesis test is 0.03. Would the null hypothesis be rejected at the 1% significance level in this case? Answer with a YES or NO.

_____ 33. Assume the p-value in this hypothesis test is 0.03. Do the data indicate that the mean television household viewing time per week during a political crisis is more than 22 hours at the 1% significance level stated above? Answer with a YES or NO.